RECLAMATION

Managing Water in the West

CELEBRATING 30 YEARS

SAFETY EVALUATION OF EXISTING DAMS INTERNATIONAL TECHNICAL SEMINAR AND STUDY TOUR

JUNE 3-12, 2019

U.S. Department of the Interior
Bureau of Reclamation

INTRODUCTION/SEMINAR OBJECTIVES

In most countries throughout the world, interest in the safety of dams has risen significantly in recent years. Aging dams, new hydrologic information, and population growth in floodplain areas downstream from dams has resulted in an increased emphasis on dam safety evaluation as well as operation and maintenance related to the safety of dams. Those responsible for the safety of existing dams must implement policies and procedures that warrant public confidence. This demands professional practices that incorporate the lessons of the past and conform to the most advanced technical state-of-the-art. The need for trained personnel is essential. This seminar will provide professional personnel with a comprehensive guide to establishing or enhancing a visual inspection/evaluation program and increase the technical capabilities of those responsible for safety evaluations.

Bureau of Reclamation officials will provide training for the seminar. Reclamation is responsible for the proper operation, maintenance, and structural safety of more than 400 dams and distribution systems. Reclamation has conducted similar seminars for its own staff, as well as for more than 6,000 technical and administrative officials from other domestic and international agencies.

WHO SHOULD ATTEND

The seminar is designed for managers, administrators, engineers, and geologists responsible for the design, construction, operation, maintenance, and safety of dams. Policymakers and planners, as well as those with technical responsibilities, may also benefit from the seminar. All presentations, discussions, and printed materials will be in the English language. Participants should have a good command of general and technical English usage.

SEMINAR TOPICS

The first portion of the seminar, June 3-6, will take place in Denver, Colorado, at Sheraton Denver West Hotel, and consist primarily of classroom presentations and discussions.

Lectures, case histories, and structured discussions covering all aspects of a dam safety examination program are led by Reclamation engineers or geologists with extensive experience and knowledge in the areas of design, construction, operation, maintenance, and dam safety.

The course outlines the hydrologic, seismic, geotechnical, electrical, mechanical and structural considerations of dam safety as well as operation, maintenance, surveillance, and emergency preparedness. Presentations, case histories, and a walk-through abbreviated examination are used to present the multidiscipline approach to an effective safety of dams program. A tour of the Bureau of Reclamation Research Laboratories will also be featured.

SIMULATED EXAM

On Friday, June 7, participants will travel by motorcoach to Pueblo Dam, located on the Arkansas River about 10 kilometers upstream, and west of the city of Pueblo, Colorado. Reclamation staff will lead participant in an abbreviated simulated dam examination.

STUDY TOUR

The post session study tour begins June 8, with a tour of Colorado’s Rocky Mountain National Park, one of the most popular national parks in the United States. On June 9, participants will travel by air to Phoenix, Arizona. June 10-11will include site visits to Bartlett Dam, Horseshoe Dam, Stewart Mountain Dam and Theodore Roosevelt Dam, all part of Reclamations Lower Colorado Region and the Salt River Project. On June 12 the study tour will conclude with a VIP tour of Hoover Dam and close-out dinner.

LOCATION AND VENUE

The technical session will take place in Denver, Colorado, at the Sheraton Denver West Hotel. Denver is the capital of Colorado and one of the fastest growing cities in the United States. Denver is nicknamed the Mile-High City because its official elevation is exactly one mile (5280 feet or 1609 meters) above sea level, making it the highest major city in the United States.

ARRIVAL AND DEPARTURE INFORMATION

International travel should be arranged into Denver, Colorado, no later than Sunday, June 2, 2019. Return travel should be arranged out of Las Vegas, Nevada, no earlier than Thursday, June 13, 2019.

HOTEL ACCOMMODATIONS

Hotel accommodations in Denver, Colorado, June 3-8 (check out June 9), must be reserved and paid for by the participant. A block of rooms have been reserved at the Sheraton Denver West Hotel at a special rate of US $164.00 per night plus tax. It is highly recommended you reserve your room early to ensure availability. The special rate is available until **May 3, 2019**. Reservations made after May 3, 2019, will be at the prevailing room rate, subject to availability.

Sheraton Denver West Hotel
360 Union Boulevard
Lakewood, Colorado 80228
Online reservation click here: 2019 International Dam Safety

REGISTRATION FEE

The registration fee is $3600 per person and includes:

- Technical Sessions
- Various printed and electronic materials
- Hotel accommodations during Study Tour, June 9-12 (check out June 13)
- Welcome Dinner, June 4
- Close-out Dinner, June 12
- Breakfasts (Not included on June 9 travel day)
- Lunches (Not included June 9 travel day)
- Airfare during study tour (Denver to Phoenix June 9)
- Motorcoach transportation

Participants are responsible for:

- Transportation from Denver International Airport to the Sheraton Denver West Hotel
- Accommodations at the Sheraton Denver West Hotel June 2-8 (check out June 9)
- Baggage fees on United Airlines during study tour June 9
- Dinners (except for Welcome Dinner and Close-out Dinner)

The registration deadline is May 3, 2019. Due to contractual arrangements with hotels and airlines, registrations received after the deadline will only be accepted based on space availability and incur a registration fee of $3900. A legible copy of your passport must be submitted with the registration form.

PAYMENT

The preferred method of payment is a credit card. Wire transfer and checks are accepted. Checks should be in U.S. dollars and made payable to the Bureau of Reclamation. Funding is not available from the seminar organizers.

LETTERS OF INVITATION / U.S. VISA

If you require a visa to enter the United States, it is strongly recommended to apply as soon as possible to allow adequate time for visa processing. Reclamation will only send invitation letters to those registered for the seminar.

DIETARY NEEDS

Please provide dietary restrictions /needs on the registration form.

MEDICAL INSURANCE

Accidental injury/medical emergency insurance is strongly recommended and should be purchased prior to traveling to the United States. Reclamation is not financially responsible for any illnesses or injuries that may be incurred by participants. Please refer to the following website for reference: Medical Insurance

CLIMATE AND CLOTHING

Participants should expect warm weather. Business casual attire is recommended during the technical session. Long pants and sturdy closed-toed shoes are required during the study tour.

FURTHER INFORMATION

Email inquiries should be sent to internationalaffairs@usbr.gov or amedina@usbr.gov
Phone 1-303-445-2139 Fax 1-720-544-4097

Information contained in this announcement can also be located at
https://www.usbr.gov/international/seminars.html

Theodore Roosevelt Dam

STUDY TOUR

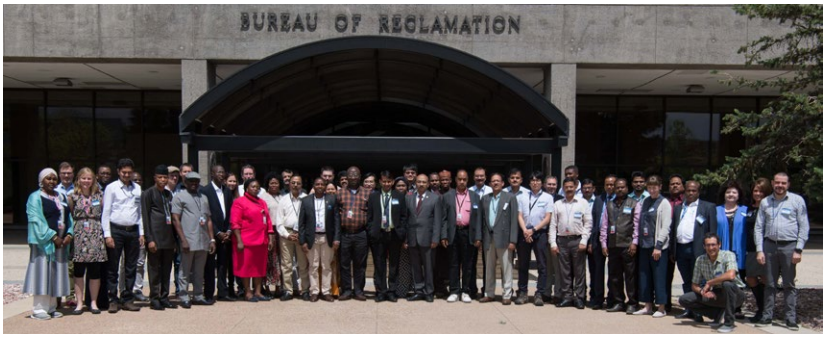
Rocky Mountain National Park in northern Colorado spans the Continental Divide and encompasses protected mountains, forests and alpine tundra. It's known for the Trail Ridge Road and the Old Fall River Road, drives that pass aspen trees and rivers. The Keyhole Route, a climb crossing vertical rock faces, leads up Longs Peak, the park's tallest mountain. A trail surrounding Bear Lake offers views of the peaks.

Pueblo Dam located on the Arkansas River about 10 kilometers (6-miles) upstream and west of the city of Pueblo, Colorado. The reservoir has a total storage capacity of 432 million cubic meters (350,000 acre-feet). The concrete dam and massive-head buttress-type spillway structure is the principal control structure for the reservoir. It is flanked by two embankment wing dams, a right embankment with a crest length of 311 meters (1,020 feet) and a left embankment with a crest length of 220 meters (720 feet). The spillway within the concrete section has a crest width of 168 meters (550 feet) and was designed for a maximum spill discharge of 5,423 cubic meters per second (191,500 cubic feet per second) at the maximum water surface elevation. The river outlet works is controlled by two 1.2-by-1.2 meter (4-by 4-foot) high-pressure gates and regulate normal water releases into the river. Additional releases may be made to the river through three separate spillway outlet works. Two 2-by-2-meter (6-by 6.5-foot) high-pressure gates control each outlet work.

Bartlett Dam was constructed by Reclamation on the Verde River, 77 kilometers (48 miles) northeast of Phoenix. This multiple-arch dam is 87 meters (287 feet) high, contains 139,000 cubic meters (182,000 cubic yards) of concrete, and creates a 220.2 million cubic meter (178,490 acre-foot) capacity reservoir. Bartlett Dam was modified by Reclamation between 1994 and 1996 to address safety concerns. The modification included construction of a new, unlined auxiliary spillway about 460 meters (1,500 feet) south of the dam's left abutment, along with a concrete control structure and three-segment fuseplug embankment along with training dikes. In addition, the dam was raised 6.5 meters (21.5 feet) to prevent overtopping, and the walls and bridge of the existing service spillway structure were modified. Modifications were begun in March 1994 and completed in December 1996.

Horseshoe Dam on the Verde River 93 kilometers (58 miles) northeast of Phoenix, is an earthfill structure 62 meters (202 feet) high, with a reservoir capacity of 162.2 million cubic meters (131,500 acre-feet). Horseshoe Dam was built from 1944-1946 by the Phelps-Dodge Copper Products Corp. for the Salt River Valley Water Users' Association under a water exchange agreement. Spillway gates were added to the dam in 1949 by the city of Phoenix to increase the domestic water supply. In 1952 the dam was raised 1.2 meters (4 feet) to elevation 2044 (623 meters above sea level).

Horseshoe Dam was also modified by Reclamation in 1993 to address concerns about its safety in the event of a Probable Maximum Flood or Maximum Credible Earthquake. Modifications included construction of a fuse plug auxiliary spillway with an erodible embankment and a concrete foundation 610 meters (2,000 feet) west of the existing spillway. In addition, a 113,000 cubic-meter (148,000 cubic-yard) stability berm was constructed at the downstream toe of the dam to help stabilize it in the event of an earthquake, and the dam was raised 2.4 meters (8 feet) to enable the spillway to pass the Probable Maximum Flood. To prevent overtopping of the structure from wave action, an additional 1.2-meter (4-foot) parapet was built on the dam's crest. Other work included modifying the service spillway gates, and construction of an auxiliary spillway, closure dike and training dike. The dam tender facilities were also relocated and the road to the boat ramp upgraded.



Participants of the 2017 SEED Seminar.

Stewart Mountain Dam on the Salt River 66 kilometers (41 miles) northeast of Phoenix, Arizona created Saguaro Lake, an 86 million cubic meter (69,765 acre-foot) capacity reservoir. The dam is a concrete thin-arch structure, 63 meters (207 feet) high, with gravity abutments. When built by the Salt River Valley Water Users' Association from 1928-1930, the dam included an open, super-elevated channel spillway equipped with radial gates.

The spillway was modified by Reclamation in 1936. The work consisted of building a concrete-lined spillway discharge channel, 137 meters (450 feet) long by 81 meters (265 feet) wide, below the existing ogee spillway; reconditioning the hoisting equipment for the radial gates; and installing individual gate operating motors and two 10-kilovolt-ampere gasoline-engine driven generators.

From 1988 to 1992, the dam was again modified by Reclamation, to meet concerns about its stability in a probable maximum flood or maximum credible earthquake. To address PMF concerns, a new spillway was constructed on the dam`s right abutment to increase its ability to safely release flood waters. As part of earthquake protection measures, a new concrete overlay was placed over areas on the right and left abutments to improve the dam`s stability. The existing power penstock and river outlet works were also replaced, the road on the top of the dam was raised and widened, and the existing left spillway and spillway wall was modified. In addition, drainage holes were drilled at selected locations in the dam`s foundation to help relieve hydraulic uplift pressures, and some areas of the foundation were grouted to help reduce seepage. Finally, 84 steel cables were installed through the dam and into its foundation to strengthen it.

Theodore Roosevelt Dam, the first major structure constructed by the Bureau of Reclamation on the Salt River Project, is located about 122 kilometers (76 miles) northeast of Phoenix and 48 kilometers (30 miles) northwest of Globe, Arizona. The dam, completed in 1911, was subsequently modified between 1989 and 1996. The original dam was a cyclopean, rubble-masonry, thick-arch structure that spanned the Salt River to form a reservoir of 1.7 billion cubic meters (1,381,580 acre-feet). It was 85 meters (280 feet) high, 220 meters (723 feet) long at the crest and contained 272,000 cubic meters (355,800 cubic yards) of masonry. In 1936, the spillways were modified by lowering crests 1.8 meters (6 feet) to increase their capacities, and installing individual gate hoists, operating motors, and two 5-kilovolt-ampere gasoline-engine driven generators.

From 1989 to 1996, the dam was modified by Reclamation. The modification raised the dam 23.5 meters (77 feet) in elevation and made the dam a concrete-gravity arch dam, increasing its water conservation storage capacity by 20 percent, adding flood control space to the reservoir, and addressing concerns about its safety as well as the safety of downstream dams. In addition to raising the dam's height, the modification included construction of two new spillways, installation of new outlet works, and powerplant modifications. Also, existing recreation facilities at Roosevelt Lake were improved, and new recreational facilities were constructed.

Hoover Dam, and Lake Mead, spanning the Arizona-Nevada State line, are located in the Black Canyon of the Colorado River about 56 kilometers (35 miles) southeast of Las Vegas, Nevada. It is a concrete thick-arch structure, 221 meters high (726.4 feet) and 379 meters long (1,244 feet). The dam contains 2.48 million cubic meters (3.25 million cubic yards) of concrete; total concrete in the dam and appurtenant works is 3.36 million cubic meters (4.4 million cubic yards). Built during the Depression; thousands of men and their families came to Black Canyon to tame the Colorado River. It took less than five years, in a harsh and barren land, to build the largest dam of its time. Now, years later, Hoover Dam still stands as a world-renowned structure. The Dam is a National Historic Landmark and has been rated by the American Society of Civil Engineers as one of America's Seven Modern Civil Engineering Wonders.